

Kentucky Industrial Hemp Research Pilot Program

Kentucky Department of Agriculture

*Presentation to Georgia House of
Representatives – Industrial Hemp Production
Study Committee*

Elberton, Georgia - August 13, 2018



Overview

- **Kentucky Pilot Program 2014-2018**
 - License Holder and University Research
 - Overview of 3 Primary Markets
- **Legal Framework**
 - Ky. Revised Statutes & Ky. Administrative Regulations
- **Program Operation**
 - Licensing, Program Fees, THC Compliance Testing
- **Production Information & Industry Economics**
 - Economic Impact for 2017, Hemp Products
 - Yield Data, Agronomic Challenges



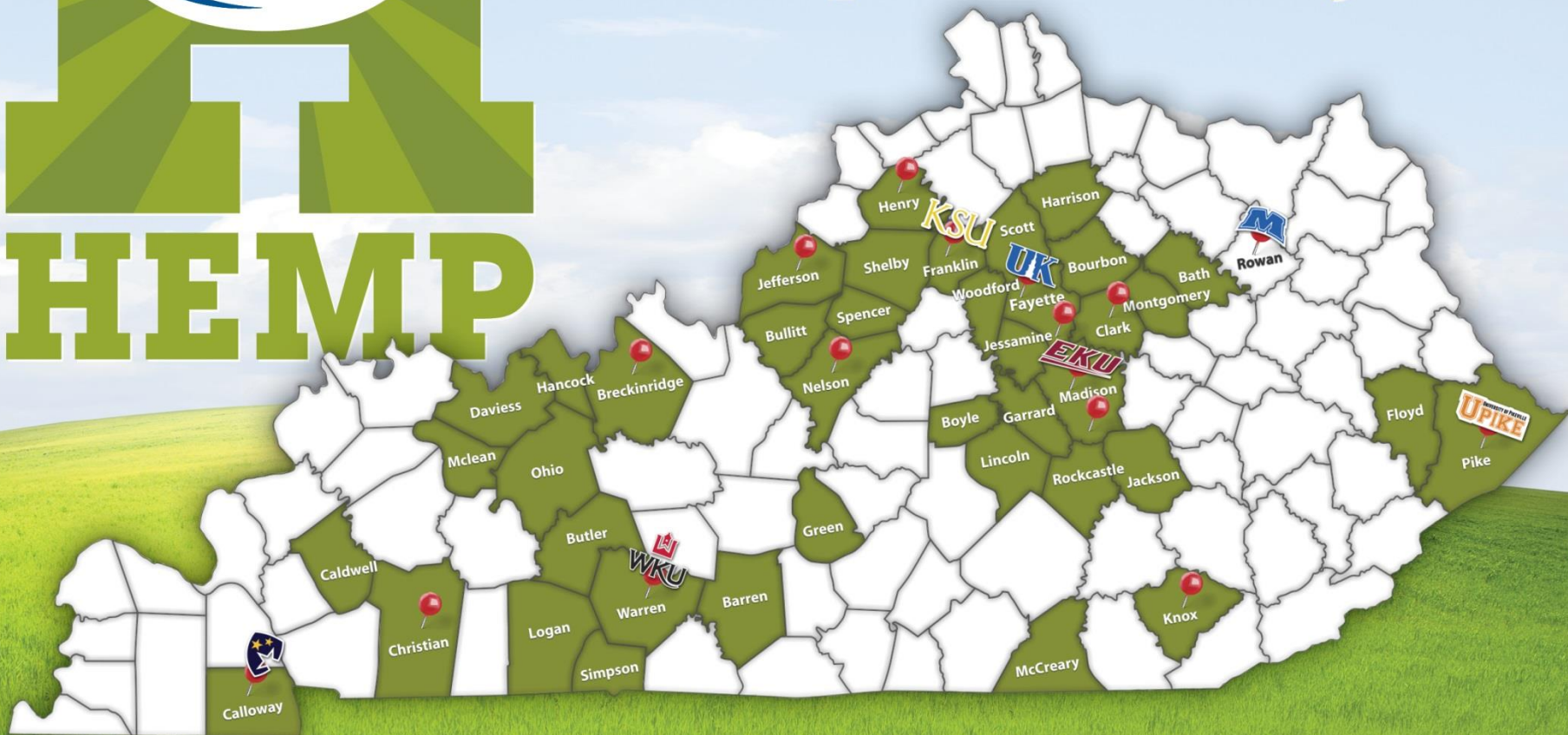
Progress Report 2014-2018





2015 KY Industrial Hemp Pilot Projects

HEMP



KYIndustrialHemp.com

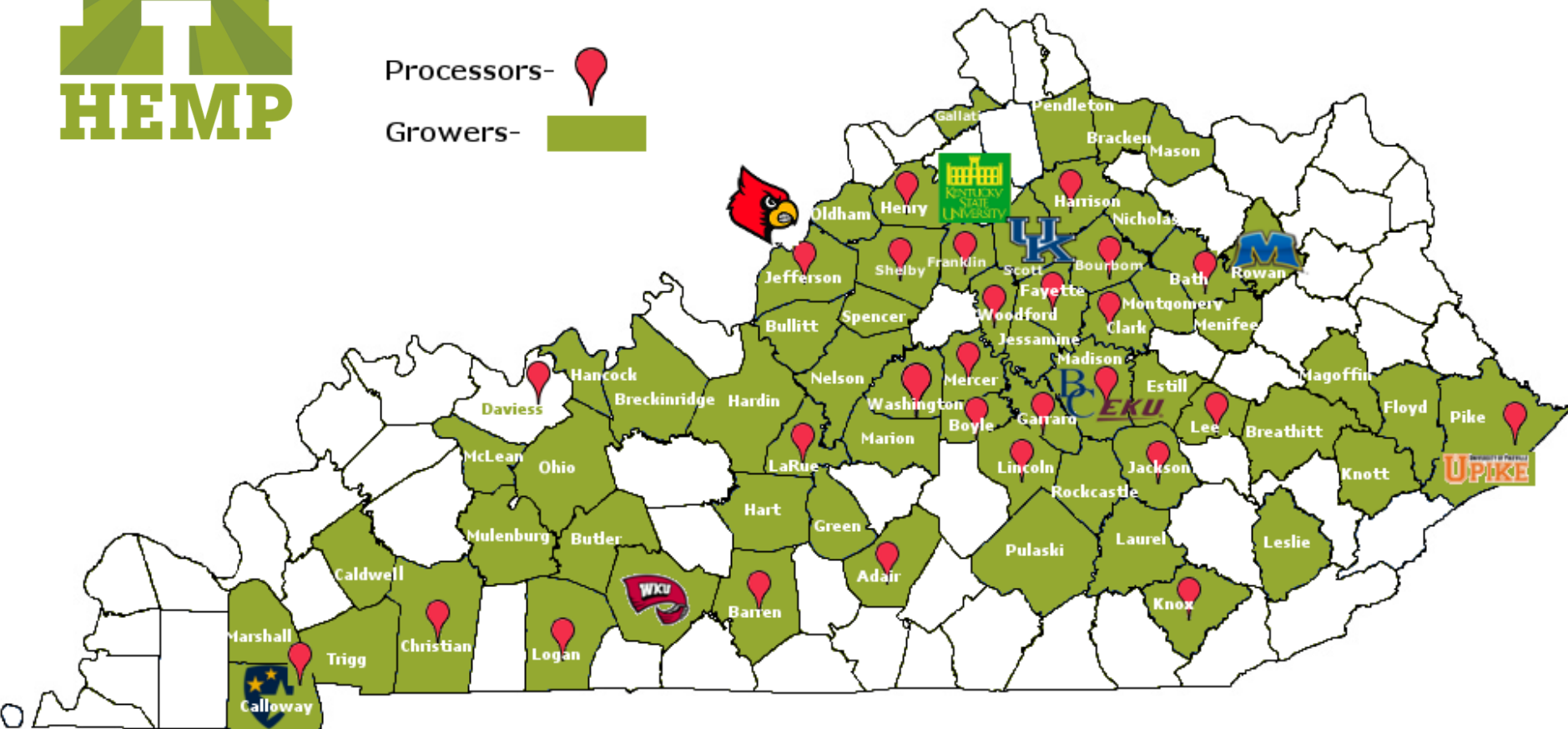


2016 Kentucky Industrial Hemp Research Pilot Program

Processors-



Growers-







- Processors
- Growers



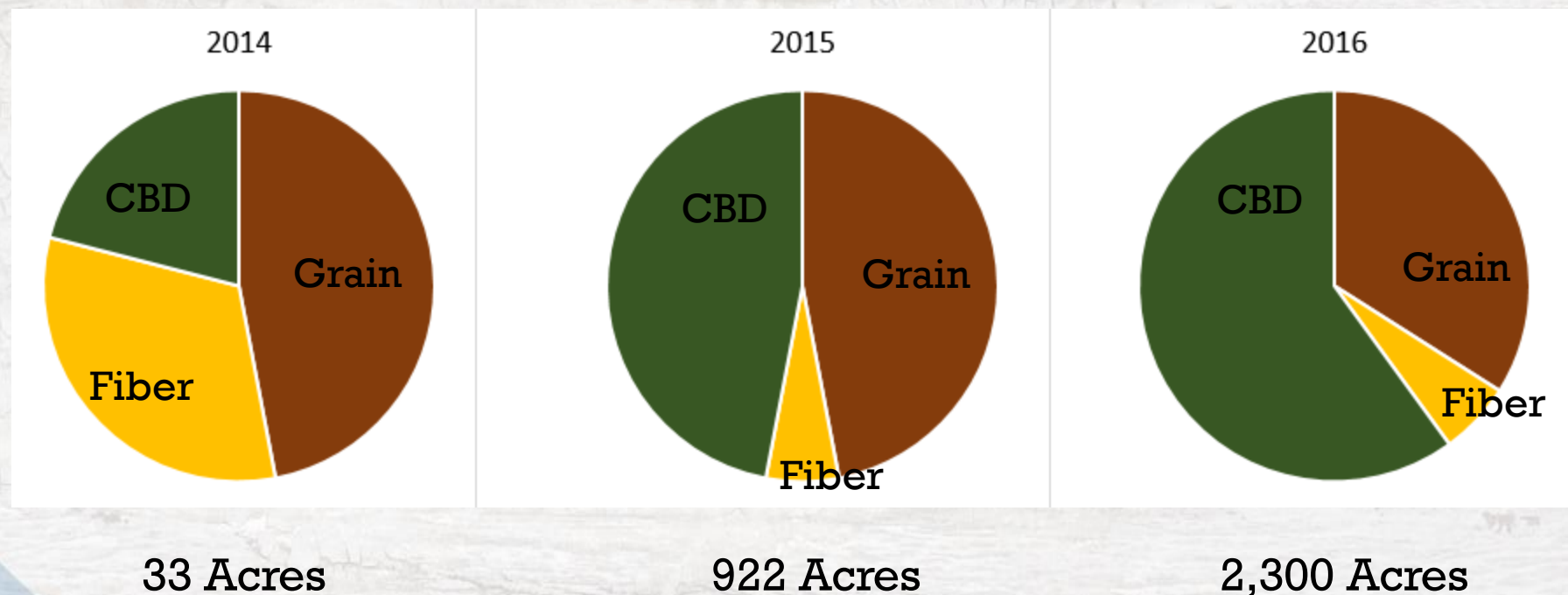
WWW.KYAGR.COM/HEMP

Kentucky Program Highlights

KDA Industrial Hemp Research Pilot Program											
Annual Overview											
Production Year	# University Projects	Approved Processors	Approved Growers	KY Counties with Hemp	Approved Acres	Planted Acres	Harvested Acres	% Grain/Seeds	% Fiber	% CBD	% CBD & Grain
2014	7	9	20	14	-	33	-	47%	32%	21%	
2015	8	29	99	41	1,742	922	500	47%	6%	47%	
2016	17	45	137	60	4,600	2,300	2,000	34%	6%	60%	
2017	17	49	204	71	12,800	3,200	2,300	36%	5%	27%	32%
2018 (June)	11	72	210	72	15,000+	-	-	-	-	-	-



Harvestable Components as a Percentage of the Annual Crop



* Based on *Planting Reports*. Varies slightly from end-of-year *Production Reports*.

University Research

- Under 2014 Farm Bill, Universities can also conduct hemp research like state depts. of ag
- Research projects range from basic agronomic, to stem retting, equipment for harvesting, and nutraceutical and industry applications
- University of Kentucky has variety trials and other studies published at <https://hemp.ca.uky.edu/>

2018 Affiliate Projects



Previous Years' Affiliate Projects



Three Primary Markets



Seeds and Grain



Fiber

**Plant Extracts,
Phytocannabinoids**



Seeds and Grain



Seeds and Grain



Fiber



Floral Material



Floral Material



Dual Purpose



Photo and Info From a Kentucky Hemp Farmer J.T. Workman:

- Note: farmer said this particular machine did not work well.
- “Hemp can be harvested for multiple end uses if proper steps are taken.
- Seeding and fertilizing rates have to be determined in such a way that the plant will yield CBD, fiber, and seed without one hindering the other.
- Harvest equipment will need to be specialized. There are some machines that can harvest 2 or even 3 at once but field conditions and timing are key.”

Legal Framework



Research Authorized by 2014 Farm Bill

7 U.S.C. § 5940. LEGITIMACY OF INDUSTRIAL HEMP RESEARCH. (also known as Section 7606 of the 2014 Farm Bill)

Who may grow:

- Institutions of higher education; and
- State departments of agriculture.

Purpose:

- For the purposes of research conducted under an agricultural pilot program or other agricultural or academic research.
- **AGRICULTURAL PILOT PROGRAM.**—The term “agricultural pilot program” means a pilot program to study the **growth, cultivation, or marketing** of industrial hemp



“Industrial Hemp” is Defined by Federal Law

- Section 7606 of the 2014 Farm Bill provides this definition:
 - “The term ‘industrial hemp’ means the plant *Cannabis sativa* L. and any part of such plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis”
- Kentucky law designed to change if industrial hemp is reclassified or if state pilot program authorization is modified

Commissioner Ryan Quarles's Strategic Aims for Industrial Hemp Program



- “Our strategy is to use KDA’s research pilot program to encourage the industrial hemp industry to expand and prosper in Kentucky.”
- “Although it is not clear when Congress might act to remove industrial hemp from the list of controlled substances, my strategic objective is to position the Commonwealth’s growers and processors to ultimately prevail as national leaders in industrial hemp production.”

Progress Made Since January 2016

- S.B. 218 (2017) – General Assembly revamped state law to align with federal law
- New transparency in application review process
- Three-fold increase in acreage
- Increased cooperation and trust with law enforcement
- Nation's best regulatory framework



Hemp ≠ Marijuana (KRS 218A.010)

- (27) "Marijuana" means all parts of the plant *Cannabis* sp., whether growing or not; the seeds thereof; the resin extracted from any part of the plant; and every compound, manufacture, salt, derivative, mixture, or preparation of the plant, its seeds or resin or any compound, mixture, or preparation which contains any quantity of these substances. The term "marijuana" does not include:
- (a) Industrial hemp that is in the possession, custody, or control of a person who holds a license issued by the Department of Agriculture permitting that person to cultivate, handle, or process industrial hemp;
 - (b) Industrial hemp products that do not include any living plants, viable seeds, leaf materials, or floral materials;
 - (c) The substance cannabidiol, when transferred, dispensed, or administered pursuant to the written order of a physician practicing at a hospital or associated clinic affiliated with a Kentucky public university having a college or school of medicine;
 - (d) For persons participating in a clinical trial or in an expanded access program, a drug or substance approved for the use of those participants by the United States Food and Drug Administration;
 - (e) A cannabidiol product derived from industrial hemp, as defined in KRS 260.850; or
 - (f) A cannabidiol product approved as a prescription medication by the United States Food and Drug Administration;

Kentucky Hemp Laws

Statutes – KRS 260.850 to 260.869

- No person shall cultivate, handle, process, or market industrial hemp in the Commonwealth unless the person holds a hemp program license from KDA.

Regulations – 302 KAR 50

- 020 Policies and Procedures for Growers
- 030 Policies and Procedures for Processors & Handlers
- 040 Affiliated Universities and Colleges
- 050 THC Sampling and Testing; Post-Testing Actions
- 060 Fees and Forms
- 070 Prohibited Products
- 080 Materials incorporated by reference

Federal Changes Coming? S. 2667

Senator McConnell and Commissioner Quarles Announce Hemp Legislation



Download photos [HERE](#).

FRANKFORT, KY – U.S. Senate Majority Leader Mitch McConnell (R-KY) and Kentucky Commissioner of Agriculture Ryan Quarles (R-KY) announced today the impending introduction of legislation in the United States Senate to support Kentucky's hemp industry. The *Hemp Farming Act of 2018* will legalize hemp as an agricultural commodity and remove it from the list of controlled substances.



S. 2667 – Cooperative Federalism

- Removes hemp from CSA list
 - Crop insurance eligibility; better access to seeds and full production marketing?
- Vests primary oversight role in the States
 - “State Plan” to be submitted to USDA
- Minimum requirements for a State Plan:
 1. GPS growing site registration
 2. THC testing
 3. Disposal program for noncompliant crops

What happens if Farm Bill includes hemp provision?

- KDA will submit a State Plan to the USDA for approval under the new federal law
- Changes in our program will be minimal



Program Operation



Program Operation

- Only legal hemp production in Kentucky is within the Industrial Hemp Research Pilot Program
- Annual Application Period
- Annual Background Check
- Evaluation and Approval
- 3 Types of Licenses



Program Operation

1) Processor/Handler License

- **NO live plants**
- Process harvested crop into products
- Possess, handle, store, market Hemp
- Brokers, labs, seed cleaners

2) Grower License

- Live plants
- Fields
- Greenhouses
- Storage
- Dry, Chop, Grind
- Market Crop



Program Operation

3) Affiliated universities and colleges

- Live plants
- Fields
- Greenhouses
- Labs
- Possess, Handle, Store hemp
- Any necessary research procedures



Program Operation

- **Grower Applications – Oct.- Nov.15**
- **Evaluations Complete – Dec. 31**
- **Mandatory Orientation – late Feb.**
- **Licenses Issued in March**
- **All GPS Coordinates Sent to Law Enforcement in March or April**
- **Seeds/Planting Materials Pre-approved and Received by KDA**
- **Site Modification Requests – Required to change/add locations**



Program Operation

- Grower Planting Report
- Grower Harvest/Destruction Reports
- Inspection, Sampling, & THC Testing
- Notification of Test Results & Compliance
- End-of-year Production Reports for Growers and Processors
- All Program Regulations, Forms, etc. found on our website:

www.kyagr.com/hemp




Program Operation


http://www.kyagr.com/marketing/hemp-pilot.h

Industrial Hemp Research P...

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Suggested Sites Web Slice Gallery

**Kentucky Department of Agriculture**
A Consumer Protection and Service Agency








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KENTUCKY INDUSTRIAL HEMP RESEARCH PILOT PROGRAM

Welcome to the Kentucky Department of Agriculture (KDA) Industrial Hemp Research Pilot Program website.

At the start of 2018, KDA launched a new website. All information on the industrial hemp program was formerly located on one page. Today you will find expanded information on several pages, as listed in the right sidebar (mobile users scroll down) under the heading "Program Pages".


- * **Industrial Hemp Research Pilot Program Overview.** Provides a general overview of industrial hemp and the Kentucky research program.
- * **Hemp and the Law.** Dive into the heart of hemp policy and regulation. Check in regularly for updates on laws and regulations in Kentucky and at the federal level.
- * **Applications.** Interested in joining the program? Visit this page for the *Grower* and *Processor/Handler License Applications*, as well as *University Affiliation Application* forms.
- * **License Holders.** License Holders and Affiliated Universities in the program have constant access to program forms and a convenient list of deadlines.

Office Of Agricultural Marketing

- Direct Farm Marketing
- Education & Outreach
- Grants
- Kentucky Proud
- Livestock
- Plant**
 - Forage Program
 - GAP
 - Ginseng
 - Hemp**
 - Horticulture
 - Organic
- Promotion & Development
- Shows and Fairs

Program Pages

- Industrial Hemp Research Pilot Program Overview
- Hemp and the Law
- Applications for the Hemp Program
- License Holders - Forms and Milestones
- Restrictions on Sale or Transfer
- Picture Gallery


Kentucky Department of Agriculture

Program Operation - Fees

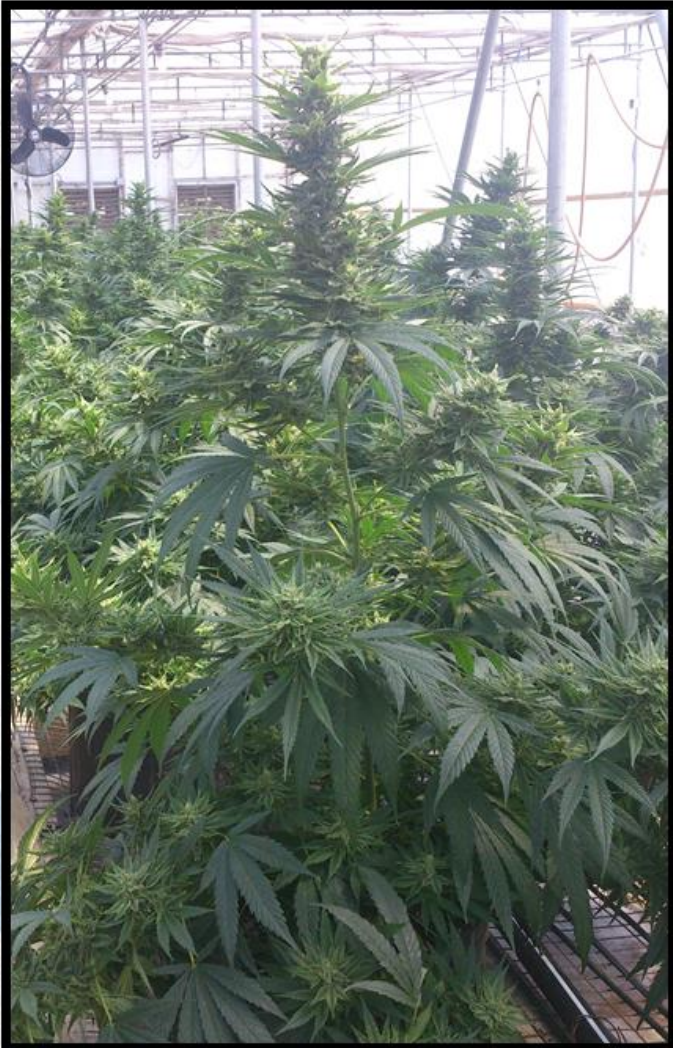
- \$100 – Application Fee
- \$400 – Grower Participation Fee PER Address
- \$750 – Site Modification Surcharge PER field or greenhouse
- Processor Participation Fees:
 - \$3,000 Floral Material
 - \$500 Grain
 - \$500 Fiber
 - \$500 Handler

Program Operation

- Cooperation with law enforcement is critical.
- THC Analysis: Delta-9 THC measurement of field samples
- Every field and greenhouse is inspected and sampled



Why test THC?



Only THC analysis can separate hemp from illegal cannabis.



Movement of Hemp Materials

Table 1: In-Program Materials

Harvestable Component	Form of Material
Fiber	whole stalks, including leaf and seed materials
	bales of stalks
Roots	raw
Leaves or Floral Material	fresh, unprocessed
	dried
	ground
Grain (food product)	raw, unprocessed
Seed (for replication)	whole seed, cleaned or uncleaned
Transplants	rooted plants
	cuttings

Table 2: Out-of-Program Materials

Harvestable Component	Form of Material
Fiber	whole stalk, stripped of leaf and seed materials
	decorticated fiber (bast and/or hurd)
Roots	dried
	ground
Leaves or Floral Material	cannabinoid extract
	all products derived from extracts
Grain (food product)	crushed, ground, etc.
	dehulled
	seed cake / meal
	roasted or toasted AND proven nonviable
	oil
Out-of-program transfers of these materials are compliant with KDA policy; some federal agency opinions may differ. Transfers are at your own RISK.	

See also: 302 KAR 50:070 Prohibited Products and
KRS 218A.010 definition of marijuana



Production Information & Industry Economics

Crop Production Overview



- Spring planted annual.
- Similar fertility requirements to wheat (\$100-125/acre, at least 100 units N, more for grain, less for fiber).
- Mature to fiber in 60-90 days.
- Seed/Grain production 100+ days.
- CBD production systems vary, many resemble tobacco or vegetable production.
- Extremely sensitive to light cycle.

Grain Production

- Similar to small grain production
- Desire short plants for ease of harvest
- Planted with a grain drill
- Harvested using combine
- Will see grain harvest from much taller plants for “seeds”
- Seed/Grain Yield = Average 800-1,000 lbs. per acre, KDA max.= 1,600+
- \$0.65- \$0.75 per pound (\$1+ for organic)
- Returns per acre, max. \$1,200
- Hemp Grain is high in oil and protein, consumer demand for health food



Fiber Production



- Very dense plant population (twice as dense as grain).
- Desire tall plants with SMALL stalk, and less leafy material.
- Harvested using typical hay equipment: mow, field retting 2-3 weeks, then roll baling.
- Some areas of the world harvest by chopping, not sure yet, which method will work best here.
- Yields 1-5.5 tons per acre of dry matter (whole dry stems).
- Fiber price \$70-\$135 / ton for whole stems.
- Fiber crop vs dual purpose.
- Return per acre up to \$700.
- Stems = 15-20% Bast, 70+% Hurd, 5-10% Waste.
- Fiber uses -polymer composites to horse bedding.

Cannabinoid Production

- Majority of growers - Only female plants.
- Desire bushy plants with large number of flowers.
- Current Production models tobacco or vegetable.
- CBD Levels are highest in the floral materials.
- Both field & greenhouse production.
- Maximum production for one plant = approx. one pound dried floral material for extraction.
- Three years ago we heard of prices as high as \$1,000 / lb for dried material, declining RAPIDLY.
- Emerging market; more product on market will see reductions in price to much less than \$10/lb.
- Extract generated per lb of dried material varies widely.
- Transition to mechanized harvest will change economics.



Kentucky Program Highlights

2017 Processor Production Reports

- \$7.5 Million Paid to Kentucky Growers
- \$25.6 Million Capital Investments made
 - 81 Full-time Jobs Created
- \$16.7 Million Gross Product Sales



Hemp-Derived Products

Composite Materials



Fabric



Animal Bedding



Construction



Products for Human Consumption

Protein Powder



Cosmetics

Baking



Cannabinoid Extracts

Hulled Grain



Seed Oil

Production Report Data*

<u>2017</u>	<u>Grain</u>	<u>Fiber</u>	<u>Floral</u>
Growers	20	14	112
Acres Planted	1,227	159	1,883
Acres Harvested	826	120	1,371
Avg. Yield lb/acre**	518	2,556	1,024
Avg. Price per lb	\$1.70^	\$0.34	\$7.20

**Preliminary; analysis of 2017 production report data is not complete.*

***Average Yield was calculated only from plots with reported yields above zero. (Does not include dual purpose Grain & Floral)*

^ Typical price is under \$1 per pound for crushed grain; average includes seed; some farmers received per acre price guarantee



2017 Production Report Data*

- Grain Only – 1,227 Acres
- Floral Only – 938 Acres
- Grain & Floral, Dual Purpose – 941 Acres

Yield Comparison

	<u>Single</u>	<u>Dual Purpose</u>
Grain (lbs/acre)	518	603
Floral (lbs/acre)	1,088	969

**Preliminary; analysis of 2017 production report data is not complete.*



Contact KDA

Industrial Hemp Program Staff

Kentucky Department of Agriculture

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